

$$\textcircled{1} x=5, \frac{-5 \pm 5i\sqrt{3}}{2}$$

$$\textcircled{2} x=4, -1$$

$$\textcircled{3} (\underline{x^3-2})(x^2-4) = 0$$

$$(x+2)(x-2) = 0$$

$$x=2, -2$$

$$\textcircled{4} x=1, 2$$

$$x^2-3x+2=0$$

$$(x-1)(x-2)=0$$

$$x-1=0$$

$$x-2=0$$

$$\textcircled{5} (2x-5)(x+1)=0$$

$$x_1 = \frac{5}{2}, -1$$

$$\textcircled{6} x^2(2x-1)+3(2x-1)=0$$

$$(2x-1)(x^2+3)=0$$

$$\boxed{x = \frac{1}{2}}$$

$$x^2+3=0$$

$$\sqrt{x^2} = \sqrt{-3}$$

$$\boxed{x = \pm i\sqrt{3}}$$

$$\textcircled{7} x = \frac{-1 \pm i\sqrt{3}}{2}$$

$$\textcircled{8} \quad x^4 - 16 = 0$$

$$(x^2 - 4)(x^2 + 4) = 0$$

$$(x - 2)(x + 2)(x^2 + 4) = 0$$

$$\textcircled{x=2} \quad \textcircled{x=-2}$$

$$x^2 + 4 = 0$$

$$\sqrt{x^2} = \sqrt{-4}$$

$$\boxed{x = \pm 2i}$$

$$\textcircled{9} \quad 25x^2 - 16 = 0$$

$$\frac{\cancel{25}x^2}{\cancel{25}} = \frac{16}{25}$$

$$\sqrt{x^2} = \sqrt{\frac{16}{25}}$$

$$x = \pm \frac{4}{5}$$

$$25x^2 - 16 = 0$$

$$(5x-4)(5x+4) = 0$$

$$\textcircled{10} \quad 3x^4 - x^2 - 2 = 0$$

$$(3x^2 + 2)(x^2 - 1) = 0$$

$$3x^2 + 2 = 0$$

$$x^2 - 1 = 0$$

$$3x^2 = -2$$

$$\sqrt{x^2} = \sqrt{-2/3}$$

$$x = \pm i \frac{\sqrt{2}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$$

$$\boxed{x = \pm i \frac{\sqrt{6}}{3}}$$

$$\sqrt{x^2} = \sqrt{1}$$

$$\boxed{x = \pm 1}$$

$$\textcircled{11} \quad x = \pm i\sqrt{10}, 5$$

$$\textcircled{12} \quad x = 0, -4, 1$$

$$\textcircled{13} \quad x = 3, \frac{-3 \pm 3i\sqrt{3}}{2}$$

$$\textcircled{14} \quad (3x^8)(25x^2 - 1) = 0$$

$$3x^8 = 0$$

$$x^8 = 0$$

$$\textcircled{x=0}$$

$$25x^2 - 1 = 0$$

$$25x^2 = 1$$

$$\sqrt{x^2} = \sqrt{\frac{1}{25}}$$

$$\textcircled{x = \pm \frac{1}{5}}$$

$$\textcircled{15}$$

$$x = -2$$

$$x = 1 \pm i\sqrt{3}$$

$$\textcircled{11} (x^3 - 5x^2) + (10x - 50) = 0$$

$$\underline{x^2(x-5)} + \underline{10(x-5)} = 0$$

$$(x-5)(x^2+10) = 0$$

$$\textcircled{x=5}$$

$$x^2 + 10 = 0$$

$$\sqrt{x^2} = \sqrt{10}$$

$$x = \pm i\sqrt{10}$$

$$\textcircled{15} \quad X^3 + 8 \leftarrow (2)^3$$

$$(X+2)(X^2-2X+4)=0$$

$$X+2=0$$

$$\textcircled{X=-2}$$

$$X^2-2X+4=0$$

$$\begin{aligned} a &= 1 \\ b &= -2 \\ c &= 4 \end{aligned}$$

$$X = \frac{2 \pm \sqrt{(-2)^2 - (4 \cdot 1 \cdot 4)}}{2}$$

$$X = \frac{2 \pm \sqrt{-12}}{2} = \frac{2 \pm i\sqrt{12}}{2}$$

$$X = \frac{2 \pm 2i\sqrt{3}}{2}$$

$$\boxed{X = 1 \pm i\sqrt{3}}$$

$$\begin{array}{r|rrrr} -2 & 1 & 0 & 0 & 8 \\ & & -2 & 4 & -8 \\ \hline & 1 & -2 & 4 & 0 \end{array}$$

$$\textcircled{1} \sqrt{x^2} = \sqrt{25}$$

$$x = \pm 5$$

$$\textcircled{2} (\sqrt{x})^2 = (3)^2$$

$$x = 9$$

$$\textcircled{3} \sqrt[3]{x^3} = \sqrt[3]{125}$$

$$x = 5$$

$$\textcircled{4} (\sqrt[3]{x})^3 = (4)^3$$

$$x = 64$$

$$\textcircled{5} \sqrt[4]{x^4} = \sqrt[4]{16}$$

$$\textcircled{x = 2}$$

$$\textcircled{6} (\sqrt[4]{x})^4 = (5)^4$$

$$\boxed{x = 625}$$

$$\textcircled{7} (x^{\frac{2}{3}})^{\frac{3}{2}} = (9)^{\frac{3}{2}}$$

$$\textcircled{x = 27}$$

$$\cancel{\frac{2}{5}} \cdot \cancel{\frac{3}{2}} \cdot x = 7 \cdot \cancel{\frac{2}{5}}$$

$$x =$$

$$\textcircled{8} \left(X \right)^{\frac{5}{3}} = \left(4 \right)^{\frac{5}{3}}$$

$$X = 10.08$$

9

~~$$2\sqrt{X} = 8$$~~

~~$$(\sqrt{X})^2 = (4)^2$$~~

$$X = 16$$

$$\textcircled{10} \quad 4\sqrt{x} - 5 = 3$$

+5 +5

$$\frac{4\sqrt{x}}{4} = \frac{8}{4}$$

$$(\sqrt{x})^2 = (2)^2$$

$$\textcircled{x = 4}$$

$$\textcircled{11} \quad x^{3/4} + 10 = 30$$

-10 -10

$$(x^{3/4})^{4/3} = (20)^{4/3}$$

$$x = 54.29$$

$$\textcircled{12} \quad \frac{2 X^{4/3}}{2} = \frac{24}{2}$$

$$\left(X^{4/3} \right)^{3/4} = \left(12 \right)^{3/4}$$

$$X = 6.45$$

CHECK YOUR ANSWERS

$$(A) (x-4)^2 = (\sqrt{2x})^2$$

$$(x-4)(x-4) = 2x$$

$$x^2 - 8x + 16 = 2x$$

$$x^2 - 10x + 16 = 0$$

$$(x-8)(x-2) = 0$$

$$x=8, 2$$

$$x-4 = \sqrt{2x}$$

$$8-4 = \sqrt{16}$$

$$4 \neq 4$$

$$2-4 = \sqrt{4}$$

$$-2 \neq 2$$

$$(B) \sqrt{4x-7} + 2 = 5$$

$$(\sqrt{4x-7})^2 = (3)^2$$

$$4x-7=9$$

$$4x=16$$

$$x=4$$

$$\sqrt{4(4)-7} + 2 = 5$$

$$\sqrt{9} + 2 = 5$$

$$3+2 \neq 5$$

RADICAL FORM:

$$\textcircled{1} \quad \sqrt[4]{2x} - 13 = -9$$

$$\begin{array}{r} +13 \\ \hline \end{array} \quad \begin{array}{r} +13 \\ \hline \end{array}$$
$$(\sqrt[4]{2x})^4 = (4)^4$$

$$\frac{2x}{2} = \frac{256}{2}$$

$$x = 128 \checkmark$$

$$\textcircled{6} \quad \left((x-4)^{\frac{3}{2}} \right)^{\frac{2}{3}} = (-6)^{\frac{2}{3}}$$

$$x-4 = 3.302$$

$$x = 7.3032$$

check:

$$6.0003 \neq -6$$

no solution